



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/714,033

11/14/2003

Mohammad R. Haghighat

INTEL/17855

2870

34431

7590

11/01/2006

HANLEY, FLIGHT & ZIMMERMAN, LLC
20 N. WACKER DRIVE
SUITE 4220
CHICAGO, IL 60606

EXAMINER

NGUYEN, PHILLIP H

ART UNIT

PAPER NUMBER

2191

DATE MAILED: 11/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center">Office Action Summary</p>	<p>Application No.</p> <p align="center">10/714,033</p>	<p>Applicant(s)</p> <p align="center">HAGHIGHAT ET AL.</p>	
	<p>Examiner</p> <p align="center">Phillip H. Nguyen</p>	<p>Art Unit</p> <p align="center">2193</p>	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>20031216</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is in response to the original filing of November 14, 2003. Claims 1-30 are pending and have been considered below.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1, 9, 19, and 25 rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 1, 9, and 25 are non-statutory because the language of the claims raise a question as to whether the claims are directed to an abstract idea that is not tied to a technological art, environment or machine which would accomplished a practical application producing a concrete, useful, and tangible result to form the basis of statutory subject matter under 35 U.S.C. 101. For instance, "identifying at least one of the plurality of tests based on the one or more test profiles" is not a tangible result because the outcome is not realized as a monitoring, controlling or any other tangible output that would provide a utility. Therefore, the claims are non-statutory.

Claim 19 is non-statutory because the language of the claim is directed to software, per se, lacking storage on a medium, which enables any underlying functionality to occur. Additional items to consider is whether the claim is directed to an

Art Unit: 2193

abstract idea that is not tied to a technological art, environment or machine which would accomplished a practical application producing a concrete, useful, and tangible result to form the basic of statutory subject matter under 35 U.S.C. 101. For instance, "identifying at least one of the plurality of tests based on the one or more test profiles" is not a tangible result because the outcome is not realized as a monitoring, controlling or any other tangible output that would provide a utility. Therefore, the claims are non-statutory.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Plum (5,758,061).

Claim 1: Plum discloses a method comprising:

a. generating an instrumented code of the application ("instrumenting source code to resulted in an instrumented source code" Col 5, line 40-41);

b. executing a plurality of tests on the instrumented code of the application ("define inputs in the form of test cases to be provided to this executable 108" Col 6, line 5-6);

c. generating one or more test profiles associated with the plurality of tests (“permit the instrument code to generated coverage test results” Col 6, line 24-25, a cumulative coverage report and an increment coverage report are considered as profiles); and

d. identifying at least one of the plurality of tests based on the one or more test profiles (“determines whether this particular path has been reached by any previous execution” Col 8, line 9-11, each path is represented one test).

Claim 2: Plum discloses the method as in claim 1 above, and further discloses wherein generating the instrumented code of the application comprises inserting one or more probes into the application (“inserts instrumented code at appropriate insertion points within the original source code” Col 5, line 42-43).

Claim 3: Plum discloses the method as in claim 1 above, and further discloses wherein generating the one or more test profiles associated with the plurality of tests comprises identifying one or more program states of the application (each information line is considered as one program state and must be identified before written to the reports) and generating one or more time stamps corresponding to each of the one or more program states (“an information line is written to the cumulative results file with the current date and time...” Col 13, line 50, each information line is considered as one program state).

Claim 4: Plum discloses the method as in claim 1 above, and further discloses wherein generating the one or more test profiles associated with the plurality of tests comprises generating one or more time stamps indicative of an earliest time ("an information line is written to the cumulative results file with the current date and time" Col 13, line 50) corresponding to a breakpoint of the application (a breakpoint is considered the end of one chunk or path or block of code) associated with one or more program states (each path is considered one program state).

Claim 5: Plum discloses the method as in claim 1 above, and further discloses wherein generating the one or more test profiles associated with the plurality of tests comprises generating one or more time stamps corresponding to one or more program states of the application based on at least one of a hardware timer, a software timer, and a virtual timer ("`#include <time.h> clock_t goal; _outp(0x43, 0xb6; /* prepare timer by sending 10111100 to port 43*/`" Col 21, line 39-61).

Claim 6: Plum discloses the method as in claim 1 above, and further discloses wherein identifying the at least one of the plurality of tests based on the one or more test profiles comprises generating a priority list ("coverage reports" Col 6, line 27-30) having the at least one of the plurality of test to identify one or more breakpoints (the end of each path or chunk or block of code is a breakpoint) of the application associated with one or more program states (each path is considered one program state).

Claim 9: Plum discloses a machine readable medium storing instructions that when executed, cause a machine to:

- a. generating an instrumented code of the application ("instrumenting source code to resulted in an instrumented source code" Col 5, line 40-41);
- b. executing a plurality of tests on the instrumented code of the application ("define inputs in the form of test cases to be provided to this executable 108" Col 6, line 5-6, a cumulative coverage report and an increment coverage report are considered as profiles Col 6, line 27-30);
- c. generating one or more test profiles associated with the plurality of tests ("permit the instrument code to generated coverage test results" Col 6, line 24-25); and
- d. identifying at least one of the plurality of tests based on the one or more test profiles ("determines whether this particular path has been reached by any previous execution" Col 8, line 9-11, each path is represented one test).

Claim 10: Plum discloses the machine readable medium as in claim 9 above, and further discloses wherein generating the instrumented code of the application comprises inserting one or more probes into the application ("inserts instrumented code at appropriate insertion points within the original source code" Col 5, line 42-43).

Claim 11: Plum discloses the machine readable medium as in claim 9 above, and further discloses wherein generating the one or more test profiles associated with the plurality of tests comprises identifying one or more program states of the application.

(each information line is considered as one program state and must be identified before written to the reports) and generating one or more time stamps corresponding to each of the one or more program states ("an information line is written to the cumulative results file with the current date and time..." Col 13, line 50, each information line is considered as one program state).

Claim 12: Plum discloses the machine readable medium as in claim 9 above, and further discloses wherein generating the one or more test profiles associated with the plurality of tests comprises generating one or more time stamps indicative of an earliest time ("an information line is written to the cumulative results file with the current date and time" Col 13, line 50) corresponding to a breakpoint of the application (a breakpoint is considered the end of one chunk or path or block of code) associated with one or more program states (each path is considered one program state).

Claim 13: Plum discloses the machine readable medium as in claim 9 above, and further discloses wherein the instructions, when executed, cause the machine to generate the one or more test profiles associated with the plurality of tests by generating one or more time stamps corresponding to one or more program states of the application based on at least one of a hardware timer, a software timer, and a virtual timer ("#include <time.h> clock_t goal; _outp(0x43, 0xb6; /* prepare timer by sending 10111100 to port 43*/" Col 21, line 39-61).

Claim 14: Plum discloses the machine readable medium as in claim 9 above, and further discloses wherein the instructions, when executed, cause the machine to identify the at least one of the plurality of tests based on the one or more test profiles by generating a priority list ("coverage reports" Col 6, line 27-30) having the at least one of the plurality of test to identify one or more breakpoints (the end of each path or chunk or block of code is a breakpoint) of the application associated with one or more program states (each path is considered one program state).

Claim 15: Plum discloses the machine readable medium as in claim 9 above, and further discloses wherein the instructions, when executed, cause the machine to identify the at least one of the plurality of tests based on the one or more test profiles and user input by generating a priority list ("coverage reports" Col 6, line 27-30) having the at least one of the plurality of test to identify one or more program states (each path is considered one program state) for each breakpoints (the end of each path or chunk or block of code is a breakpoint) of the application.

Claim 18: Plum discloses the machine readable medium as in claim 9 above, and further discloses wherein the machine readable medium comprises at least one of a programmable gate array, application specific integrated circuit, erasable programmable read only memory, read only memory, random access memory, magnetic media, and optical media (Col 5, line6-10).

Claim 19: Plum discloses an apparatus comprising:

- a. a data structure configured to store one or more test profiles ("instrument code is used to set up data structures for performing the coverage reporting process...generates coverage reports by writing the coverage reports to a file" Col 7, line 37-45, a file is a data structure and configured to store reports);
- b. a code coverage device ("instrumenter" Col 7, line 18) configured to generate an instrumented code of the application;
- c. a debugging and testing device configured to execute a plurality of tests on the instrumented code of the application ("the user may define inputs in the form of test cases to be provided to this executable 108" Col 6, line 5-6), and to generate one or more test profile associated with the plurality of test ("produces two different coverage test results: a cumulative coverage report and increment coverage reports" Col 6, line 25-30);
- d. a test identifying device configured to identify at least one of the plurality at least one of the plurality of tests based on one or more test profiles ("determines whether this particular path has been reached by any previous execution" Col 8, line 9-11, each path is represented one test).

Claim 20: Plum discloses the apparatus as in claim 19 above, and further discloses wherein the code coverage device comprises at one of a compiler, an assembler, an interpreter, and a post-link (Col 6, line 62).

Claim 21: Plum discloses the apparatus as in claim 19 above, and further discloses wherein the instrumented code of the application comprises one or more probes ("instrument code") to identify one or more program states of the application ("inserts instrument code into each block or chunk of the program" Col 5, line 56-57) and to generate one or more time stamps corresponding to each of the one or more program states ("an information line is written to the cumulative results file with the current data and time" Col 13, line 50, each information line is one program state).

Claim 22: Plum discloses the apparatus as in claim 19 above, and further discloses wherein the one or more test profiles comprises one or more time stamps indicative of an earliest time ("an information line is written to the cumulative results file with the current date and time" Col 13, line 50) corresponding to a breakpoint of the application (a breakpoint is considered the end of one chunk or path or block of code) associated with one or more program states of the application (each path is considered one program state).

Claim 24: Plum discloses the apparatus as in claim 19 above, and further discloses a test prioritizing device ("instrument code" Col 6, line 24-25) to generate a priority list ("Coverage reports" Col 6, line 27-30) having at least one of the plurality of tests.

Claim 25: Plum discloses a processor system comprising:

- a. a dynamic random access memory (Col 5, line 7);
- b. a processor operatively coupled to the DRAM (Col 5, line 7), the processor being configured to:
 - c. generating an instrumented code of the application ("instrumenting source code to resulted in an instrumented source code" Col 5, line 40-41);
 - d. executing a plurality of tests on the instrumented code of the application ("define inputs in the form of test cases to be provided to this executable 108" Col 6, line 5-6);
 - e. generating one or more test profiles associated with the plurality of tests ("permit the instrument code to generated coverage test results" Col 6, line 24-25); and
 - f. identifying at least one of the plurality of tests based on the one or more test profiles ("determines whether this particular path has been reached by any previous execution" Col 8, line 9-11, "a cumulative coverage report and an incremental coverage report" are considered as profiles Col 6, line 27-30).

Claim 26: Plum discloses a processor system as defined in claim 25 above, and further discloses wherein the instrumented code of the application comprises one or more probes inserted into the application to identify one or more program states of the application ("the instrumenting process inserts instrument code at appropriate insertion points within the original source code" Col 5, line 41-43) and to generate one or more time stamps corresponding to each of the one or more program states ("an information

line is written to the cumulative results file with the current date and time" Col 13, line 50-51, each information line is considered one program state).

Claim 27: Plum discloses a processor as in claim 25 above, and further discloses wherein one or more test profiles comprises one or more time stamps corresponding to one or more program state of the application ("an information line is written to the cumulative results file with the current data and time" Col 13, line 50, each information line is considered as one program state).

Claim 28: Plum discloses the processor system as in claim 25 above, and further discloses wherein the one or more test profiles comprises one or more time stamps indicative of an earliest time ("an information line is written to the cumulative results file with the current date and time" Col 13, line 50) corresponding to a breakpoint of the application (a breakpoint is considered the end of one chunk or path or block of code) associated with one or more program states of the application (each path is considered one program state).

Claim 29: Plum discloses the processor system as in claim 25 above, and further discloses wherein the processor is configured to generate a priority list ("coverage reports" Col 6, line 27-30) having the at least one of the plurality of tests to identify one or more breakpoints (a breakpoint is the end of each path or chunk code or

block of code) of the applications associated with one or more program states (each path is one program state).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 8 rejected under 35 U.S.C. 103(a) as being unpatentable over Plum (5,758,061) in view of Blasciak et al (5,265,254).

Claim 7: Plum discloses the method as in claim 1 above, and further discloses when the instrumented program begins execution, it reads the cumulative results file in order to determine what chunks have already been reached by prior executions (Col 18, line 35-38, by reading the file, it can identify what tests have already been tested), but does not explicitly disclose wherein identifying the at least one of the plurality of tests based on the one or more test profiles comprises identifying the at least one of the plurality of tests based on the one or more test profiles in response to a query.

However, Blasciak discloses an analogous system of debugging software comprises a database for storing debugging information (Col 3, line 54-55) and database may then be queried (Col 7, line 38). It would have been obvious to one having an ordinary skill in the art at the time the invention was made to recognize using database to store

Art Unit: 2193

reports is more convenience than file. Therefore, one of the skilled in the art would have been motivated to use database in Plum's approach for storing reports for more convenience and the database can be queried to identify what tests have already been tested.

Claim 8: Plum discloses the method as in claim 1 above, and further discloses "write the coverage reports to a file" (Col 7, line 44-45), but does not explicitly disclose storing the one or more test profiles in a database. However, Blasciak discloses an analogous system of debugging software comprises a database for storing debugging information (Col 3, line 54-55). It would have been obvious to one having an ordinary skill in the art at the time the invention was made to recognize using database for storing data is more convenience than file. Therefore, one of the skilled in the art would have been motivated to use database in Plum's approach for storing reports because it is easy to organize data and also for searchable or query purpose.

Claims 16-17 are machine readable medium claims, reciting the limitations as recited in claim 7-8, therefore, have been addressed in connection with the rejection of claims 7-8.

Claims 23 and 30 are apparatus and processor claims respectively, reciting the limitations as recited in claim 7 above, therefore, have been addressed in connection with the rejection of claim 7.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phillip H. Nguyen whose telephone number is (571) 270-1070. The examiner can normally be reached on Monday - Friday 10:00 AM - 3:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki can be reached on (571) 272-3719. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PN
10/26/06

Kakali Chaki
Supervisory Patent Examiner



**KAKALI CHAKI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100**